



SEQUENCE LISTING

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BLE SCH, ARMIN

<120> MUTANT PRO-NEUROTROPHIN WITH IMPROVED ACTIVITY

<130> 041673/2045

<140> 09/788,188

<141> 2001-02-16

<160> 16

<170> PatentIn Ver. 2.1

<210> 1

<211> 241

<212> PRT

<213> Homo sapiens

<400> 1

Met Ser Met Leu Phe Tyr Thr Leu Ile Thr Ala Phe Leu Ile Gly Ile
1 5 10 15

Gln Ala Glu Pro His Ser Glu Ser Asn Val Pro Ala Gly His Thr Ile
20 25 30

Pro Gln Val His Trp Thr Lys Leu Gln His Ser Leu Asp Thr Ala Leu
35 40 45

Arg Arg Ala Arg Ser Ala Pro Ala Ala Ala Ala Ile Ala Ala Arg Val Ala
50 55 60

Gly Gln Thr Arg Asn Ile Thr Val Asp Pro Arg Leu Phe Lys Lys Arg
65 70 75 . . . 80

Arg Leu Arg Ser Pro Arg Val Leu Phe Ser Thr Gln Pro Pro Arg Glu
85 90 95

Ala Ala Asp Thr Gln Asp Leu Asp Phe Glu Val Gly Gly Ala Ala Pro
100 105 110

Phe Asn Arg Thr His Arg Ser Lys Arg Ser Ser Ser His Pro Ile Phe
 115 120 125

His Arg Gly Glu Phe Ser Val Cys Asp Ser Val Ser Val Trp Val Gly
130 135 140

Asp Lys Thr Thr Ala Thr Asp Ile Lys Gly Lys Glu Val Met Val Leu
 145 150 155 160

Gly Glu Val Asn Ile Asn Asn Ser Val Phe Lys Gln Tyr Phe Phe Glu
 165 170 175

Thr Lys Cys Arg Asp Pro Asn Pro Val Asp Ser Gly Cys Arg Gly Ile
 180 185 190

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Asp Ser Lys His Trp Asn Ser Tyr Cys Thr Thr His Thr Phe Val
195 200 205

Lys Ala Leu Thr Met Asp Gly Lys Gln Ala Ala Trp Arg Phe Ile Arg
210 215 220

Ile Asp Thr Ala Cys Val Cys Val Leu Ser Arg Lys Ala Val Arg Arg
225 230 235 240

Ala

<210> 2

<211> 241

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Mutant NGF
pro-neurotrophin

<400> 2

Met Ser Met Leu Phe Tyr Thr Leu Ile Thr Ala Phe Leu Ile Gly Ile
1 5 10 15

Gln Ala Glu Pro His Ser Glu Ser Asn Val Pro Ala Gly His Thr Ile
20 25 30

Pro Gln Val His Trp Thr Lys Leu Gln His Ser Leu Asp Thr Ala Leu
35 40 45

Arg Arg Ala Arg Ser Ala Pro Ala Ala Ala Ile Ala Ala Arg Val Ala
50 55 60

Gly Gln Thr Arg Asn Ile Thr Val Asp Pro Arg Leu Phe Lys Lys Arg
65 70 75 80

Arg Leu Arg Ser Pro Arg Val Leu Phe Ser Thr Gln Pro Pro Arg Glu
85 90 95

Ala Ala Asp Thr Gln Asp Leu Asp Phe Glu Val Gly Gly Ala Ala Pro
100 105 110

Phe Ser Arg Thr His Arg Ser Lys Arg Ser Ser Ser His Pro Ile Phe
115 120 125

His Arg Gly Glu Phe Ser Val Cys Asp Ser Val Ser Val Trp Val Gly
130 135 140

Asp Lys Thr Thr Ala Thr Asp Ile Lys Gly Lys Glu Val Met Val Leu
145 150 155 160

Gly Glu Val Asn Ile Asn Asn Ser Val Phe Lys Gln Tyr Phe Phe Glu
165 170 175

Thr Lys Cys Arg Asp Pro Asn Pro Val Asp Ser Gly Cys Arg Gly Ile
180 185 190

Asp Ser Lys His Trp Asn Ser Tyr Cys Thr Thr Thr His Thr Phe Val
 195 200 205

Lys Ala Leu Thr Met Asp Gly Lys Gln Ala Ala Trp Arg Phe Ile Arg
 210 215 220

Ile Asp Thr Ala Cys Val Cys Val Leu Ser Arg Lys Ala Val Arg Arg
 225 230 235 240

Ala

<210> 3
 <211> 247
 <212> PRT
 <213> Homo sapiens

<400> 3
 Met Thr Ile Leu Phe Leu Thr Met Val Ile Ser Tyr Phe Gly Cys Met
 1 5 10 15

Lys Ala Ala Pro Met Lys Glu Ala Asn Ile Arg Gly Gln Gly Leu
 20 25 30

Ala Tyr Pro Gly Val Arg Thr His Gly Thr Leu Glu Ser Val Asn Gly
 35 40 45

Pro Lys Ala Gly Ser Arg Gly Leu Thr Ser Leu Ala Asp Thr Phe Glu
 50 55 60

His Val Ile Glu Glu Leu Leu Asp Glu Asp Gln Lys Val Arg Pro Asn
 65 70 75 80

Glu Glu Asn Asn Lys Asp Ala Asp Leu Tyr Thr Ser Arg Val Met Leu
 85 90 95

Ser Ser Gln Val Pro Leu Glu Pro Pro Leu Leu Phe Leu Leu Glu Glu
 100 105 110

Tyr Lys Asn Tyr Leu Asp Ala Ala Asn Met Ser Met Arg Val Arg Arg
 115 120 125

His Ser Asp Pro Ala Arg Arg Gly Glu Leu Ser Val Cys Asp Ser Ile
 130 135 140

Ser Glu Trp Val Thr Ala Ala Asp Lys Lys Thr Ala Val Asp Met Ser
 145 150 155 160

Gly Gly Thr Val Thr Val Leu Glu Lys Val Pro Val Ser Lys Gly Gln
 165 170 175

Leu Lys Gln Tyr Phe Tyr Glu Thr Lys Cys Asn Pro Met Gly Tyr Thr
 180 185 190

Lys Glu Gly Cys Arg Gly Ile Asp Lys Arg His Trp Asn Ser Gln Cys
 195 200 205

Arg Thr Thr Gln Ser Tyr Val Arg Ala Leu Thr Met Asp Ser Lys Lys
 210 215 220

Arg Ile Gly Trp Arg Phe Ile Arg Ile Asp Thr Ser Cys Val Cys Thr
 225 230 235 240

Leu Thr Ile Lys Arg Gly Arg
 245

<210> 4
 <211> 247
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Mutant BDNF
 pro-neurotrophin

<400> 4
 Met Thr Ile Leu Phe Leu Thr Met Val Ile Ser Tyr Phe Gly Cys Met
 1 5 10 15

Lys Ala Ala Pro Met Lys Glu Ala Asn Ile Arg Gly Gln Gly Gly Leu
 20 25 30

Ala Tyr Pro Gly Val Arg Thr His Gly Thr Leu Glu Ser Val Asn Gly
 35 40 45

Pro Lys Ala Gly Ser Arg Gly Leu Thr Ser Leu Ala Asp Thr Phe Glu
 50 55 60

His Val Ile Glu Glu Leu Leu Asp Glu Asp Gln Lys Val Arg Pro Asn
 65 70 75 80

Glu Glu Asn Asn Lys Asp Ala Asp Leu Tyr Thr Ser Arg Val Met Leu
 85 90 95

Ser Ser Gln Val Pro Leu Glu Pro Pro Leu Leu Phe Leu Leu Glu Glu
 100 105 110

Tyr Lys Asn Tyr Leu Asp Ala Ala Ser Met Ser Met Arg Val Arg Arg
 115 120 125

His Ser Asp Pro Ala Arg Arg Gly Glu Leu Ser Val Cys Asp Ser Ile
 130 135 140

Ser Glu Trp Val Thr Ala Ala Asp Lys Lys Thr Ala Val Asp Met Ser
 145 150 155 160

Gly Gly Thr Val Thr Val Leu Glu Lys Val Pro Val Ser Lys Gly Gln
 165 170 175

Leu Lys Gln Tyr Phe Tyr Glu Thr Lys Cys Asn Pro Met Gly Tyr Thr
 180 185 190

T950200T800260

Lys Glu Gly Cys Arg Gly Ile Asp Lys Arg His Trp Asn Ser Gln Cys
 195 200 205

Arg Thr Thr Gln Ser Tyr Val Arg Ala Leu Thr Met Asp Ser Lys Lys
 210 215 220

Arg Ile Gly Trp Arg Phe Ile Arg Ile Asp Thr Ser Cys Val Cys Thr
 225 230 235 240

Leu Thr Ile Lys Arg Gly Arg
 245

<210> 5
 <211> 257
 <212> PRT
 <213> Homo sapiens

<400> 5
 Met Ser Ile Leu Phe Tyr Val Ile Phe Leu Ala Tyr Leu Arg Gly Ile
 1 5 10 15

Gln Gly Asn Asn Met Asp Gln Arg Ser Leu Pro Glu Asp Ser Leu Asn
 20 25 30

Ser Leu Ile Ile Lys Leu Ile Gln Ala Asp Ile Leu Lys Asn Lys Leu
 35 40 45

Ser Lys Gln Met Val Asp Val Lys Glu Asn Tyr Gln Ser Thr Leu Pro
 50 55 60

Lys Ala Glu Ala Pro Arg Glu Pro Glu Arg Gly Gly Pro Ala Lys Ser
 65 70 75 80

Ala Phe Gln Pro Val Ile Ala Met Asp Thr Glu Leu Leu Arg Gln Gln
 85 90 95

Arg Arg Tyr Asn Ser Pro Arg Val Leu Leu Ser Asp Ser Thr Pro Leu
 100 105 110

Glu Pro Pro Pro Leu Tyr Leu Met Glu Asp Tyr Val Gly Ser Pro Val
 115 120 125

Val Ala Asn Arg Thr Ser Arg Arg Lys Arg Tyr Ala Glu His Lys Ser
 130 135 140

His Arg Gly Glu Tyr Ser Val Cys Asp Ser Glu Ser Leu Trp Val Thr
 145 150 155 160

Asp Lys Ser Ser Ala Ile Asp Ile Arg Gly His Gln Val Thr Val Leu
 165 170 175

Gly Glu Ile Lys Thr Gly Asn Ser Pro Val Lys Gln Tyr Phe Tyr Glu
 180 185 190

Thr Arg Cys Lys Glu Ala Arg Pro Val Lys Asn Gly Cys Arg Gly Ile
 195 200 205

TOP SECRET//COMINT

Asp Asp Lys His Trp Asn Ser Gln Cys Lys Thr Ser Gln Thr Tyr Val
 210 215 220

Arg Ala Leu Thr Ser Glu Asn Asn Lys Leu Val Gly Trp Arg Trp Ile
 225 230 235 240

Arg Ile Asp Thr Ser Cys Val Cys Ala Leu Ser Arg Lys Ile Gly Arg
 245 250 255

Thr

<210> 6
 <211> 257
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Mutant NGF
 pro-neurotrophin

<400> 6
 Met Ser Ile Leu Phe Tyr Val Ile Phe Leu Ala Tyr Leu Arg Gly Ile
 1 5 10 15

Gln Gly Asn Asn Met Asp Gln Arg Ser Leu Pro Glu Asp Ser Leu Asn
 20 25 30

Ser Leu Ile Ile Lys Leu Ile Gln Ala Asp Ile Leu Lys Asn Lys Leu
 35 40 45

Ser Lys Gln Met Val Asp Val Lys Glu Asn Tyr Gln Ser Thr Leu Pro
 50 55 60

Lys Ala Glu Ala Pro Arg Glu Pro Glu Arg Gly Gly Pro Ala Lys Ser
 65 70 75 80

Ala Phe Gln Pro Val Ile Ala Met Asp Thr Glu Leu Leu Arg Gln Gln
 85 90 95

Arg Arg Tyr Asn Ser Pro Arg Val Leu Leu Ser Asp Ser Thr Pro Leu
 100 105 110

Glu Pro Pro Pro Leu Tyr Leu Met Glu Asp Tyr Val Gly Ser Pro Val
 115 120 125

Val Ala Ser Arg Thr Ser Arg Arg Lys Arg Tyr Ala Glu His Lys Ser
 130 135 140

His Arg Gly Glu Tyr Ser Val Cys Asp Ser Glu Ser Leu Trp Val Thr
 145 150 155 160

Asp Lys Ser Ser Ala Ile Asp Ile Arg Gly His Gln Val Thr Val Leu
 165 170 175

Gly Glu Ile Lys Thr Gly Asn Ser Pro Val Lys Gln Tyr Phe Tyr Glu
 180 185 190

Thr Arg Cys Lys Glu Ala Arg Pro Val Lys Asn Gly Cys Arg Gly Ile
 195 200 205

Asp Asp Lys His Trp Asn Ser Gln Cys Lys Thr Ser Gln Thr Tyr Val
 210 215 220

Arg Ala Leu Thr Ser Glu Asn Asn Lys Leu Val Gly Trp Arg Trp Ile
 225 230 235 240

Arg Ile Asp Thr Ser Cys Val Cys Ala Leu Ser Arg Lys Ile Gly Arg
 245 250 255

Thr

<210> 7
 <211> 210
 <212> PRT
 <213> Homo sapiens

<400> 7
 Met Leu Pro Leu Pro Ser Cys Ser Leu Pro Ile Leu Leu Leu Phe Leu
 1 5 10 15

Leu Pro Ser Val Pro Ile Glu Ser Gln Pro Pro Pro Ser Thr Leu Pro
 20 25 30

Pro Phe Leu Ala Pro Glu Trp Asp Leu Leu Ser Pro Arg Val Val Leu
 35 40 45

Ser Arg Gly Ala Pro Ala Gly Pro Pro Leu Leu Phe Leu Leu Glu Ala
 50 55 60

Gly Ala Phe Arg Glu Ser Ala Gly Ala Pro Ala Asn Arg Ser Arg Arg
 65 70 75 80

Gly Val Ser Glu Thr Ala Pro Ala Ser Arg Arg Gly Glu Leu Ala Val
 85 90 95

Cys Asp Ala Val Ser Gly Trp Val Thr Asp Arg Arg Thr Ala Val Asp
 100 105 110

Leu Arg Gly Arg Glu Val Glu Val Leu Gly Glu Val Pro Ala Ala Gly
 115 120 125

Gly Ser Pro Leu Arg Gln Tyr Phe Glu Thr Arg Cys Lys Ala Asp
 130 135 140

Asn Ala Glu Glu Gly Gly Pro Gly Ala Gly Gly Gly Cys Arg Gly
 145 150 155 160

Val Asp Arg Arg His Trp Val Ser Glu Cys Lys Ala Lys Gln Ser Tyr
 165 170 175

Val Arg Ala Leu Thr Ala Asp Ala Gln Gly Arg Val Gly Trp Arg Trp
 180 185 190

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Ile Arg Ile Asp Thr Ala Cys Val Cys Thr Leu Leu Ser Arg Thr Gly
 195 200 205

Arg Ala
 210

<210> 8
 <211> 210
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Mutant NT-4/5
 pro-neurotrophin

<400> 8
 Met Leu Pro Leu Pro Ser Cys Ser Leu Pro Ile Leu Leu Leu Phe Leu
 1 5 10 15

Leu Pro Ser Val Pro Ile Glu Ser Gln Pro Pro Pro Ser Thr Leu Pro
 20 25 30

Pro Phe Leu Ala Pro Glu Trp Asp Leu Leu Ser Pro Arg Val Val Leu
 35 40 45

Ser Arg Gly Ala Pro Ala Gly Pro Pro Leu Leu Phe Leu Leu Glu Ala
 50 55 60

Gly Ala Phe Arg Glu Ser Ala Gly Ala Pro Ala Ser Arg Ser Arg Arg
 65 70 75 80

Gly Val Ser Glu Thr Ala Pro Ala Ser Arg Arg Gly Glu Leu Ala Val
 85 90 95

Cys Asp Ala Val Ser Gly Trp Val Thr Asp Arg Arg Thr Ala Val Asp
 100 105 110

Leu Arg Gly Arg Glu Val Glu Val Leu Gly Glu Val Pro Ala Ala Gly
 115 120 125

Gly Ser Pro Leu Arg Gln Tyr Phe Phe Glu Thr Arg Cys Lys Ala Asp
 130 135 140

Asn Ala Glu Glu Gly Gly Pro Gly Ala Gly Gly Gly Cys Arg Gly
 145 150 155 160

Val Asp Arg Arg His Trp Val Ser Glu Cys Lys Ala Lys Gln Ser Tyr
 165 170 175

Val Arg Ala Leu Thr Ala Asp Ala Gln Gly Arg Val Gly Trp Arg Trp
 180 185 190

Ile Arg Ile Asp Thr Ala Cys Val Cys Thr Leu Leu Ser Arg Thr Gly
 195 200 205

Arg Ala
210

<210> 9
<211> 726
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Recombinant coding sequence for NGF

<400> 9
atgtccatgt tggatcaca gctttctga tcggcataca ggcggAACCA 60
cactcagaga gcaatgtccc tgcaggacac accatcccc aagtccactg gactaaactt 120
cagcattccc ttgacactgc ctttcgcaga gcccgcagcg cccggcagc ggcgataagct 180
gcacgcgtgg cggggcagac ccgcaacatt actgtggacc ccagctgtt taaaaagcgg 240
cgactccgtt caccgggtgt gctgttagc acccagcctc cccgtgaagc tgcagacact 300
caggatctgg acttcgaggt cggtggtgct gcccccttca acaggactca caggagcaag 360
cggtcatcat cccatccat cttccacagg ggcgaattct cggtgtgtga cagtgtcagc 420
gtgtgggttg gggataagac caccggcaca gacatcaagg gcaaggaggt gatgggtttg 480
ggagaggtga acattaacaa cagtgtattc aaacagtaact ttttgagac caagtgcgg 540
gacccaaatac ccgttgacag cgggtgcgg ggcattgact caaagcactg gaactcatat 600
tgtaccacga ctcacacctt tgtcaaggcg ctgaccatgg atggcaagca ggctgcctgg 660
cggttatcc ggatagatac ggcctgtgtg tgtgtgctca gcaggaaggc tgtgagaaga 720
gcctga 726

<210> 10
<211> 676
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Recombinant coding sequence for NT-3 precursor

<220>
<221> modified_base
<222> (525)
<223> a, t, c, g, other or unknown

<220>
<221> modified_base
<222> (606)
<223> a, t, c, g, other or unknown

<220>
<221> modified_base
<222> (619)..(620)
<223> a, t, c, g, other or unknown

<220>
<221> modified_base
<222> (632)
<223> a, t, c, g, other or unknown

TGCAGATGCGCTGCG

<220>
 <221> modified_base
 <222> (643)
 <223> a, t, c, g, other or unknown

<400> 10
 tttgaaggca agcacactga ttttatttag aaaaaagctt atatactgta gggttgctga 60
 agtttaataa ataaaggta acttataata tataaaaaca atataaacat ttatatgcta 120
 catgcataatc atataattta aagtaataat ttatatatgg ggagagatgc caattcatgt 180
 tcttccgatt ttctcgaca aggcacacac acaggacgtg tctatccgta tccaccgcca 240
 gccccacgagt ttattgttct ctgaagtcag tgctcgacg tagggttggg atgtttgca 300
 ctgagagttc cagtgtttat catcaataacc cctgcaacccg ttttgaccg gcctggcttc 360
 cttacatcgc gttcataaaa aatattgtt gacaggagag ttgcccgtt tgatctcccc 420
 cagcaccgtg acctgggtgtc cccgaatgtc gatggccgat gacttgcggt cacccacaga 480
 ctctcactgt cacataccga gtactcccct cggtgactct tatgnctcgc gtaccgttt 540
 ccgcccggatg ttctgttcgc caccacgggg cttgccacgt aatctccat gagataacaag 600
 ggccggngct cccagggnn tgtgtcgctc ancaggaacc cgngtgagtg tagcggctct 660
 gttgtcgacg aagttc 676

<210> 11
 <211> 468
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Recombinant
 coding sequence for NT-4 precursor

<400> 11
 ctggattcgg atcgacacag cttgcgtctg cacgctcctc agccgaacag gccgagcctg 60
 aggtccaggc ttgggaactg cccaaagtga gggaaaacaa aaaacaaaaa accaaagctg 120
 gatgctgaaa ggaccacagg ggtggcctgg ctgctctacc gtgcctttag actgggaact 180
 ggaataacca aagaatcaa tctctctcaa atctcagtct gtgtggaatg tatggtaaaa 240
 ccaaatacgagg ttcaagtga tgaataggag ttctcccgga ggaacttgac attaataaca 300
 atagccaatg ttactatct cctgtttatc agacctgata tatgactttg gcaaccattt 360
 taacattcag agaccctggc tcatcaaaac ggacgaggaa agaacgcattg aaaagggat 420
 gcatgatgca tgcgctggag ctaggcctcc atcagtaggc tgggttctg 468

<210> 12
 <211> 633
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Recombinant
 coding sequence for NT-4/5

<400> 12
 atgctccctc tcccctcatg ctcctcccc atcctcctcc ttttcctctt ccccaagtgtg 60
 ccaattgagt cccaaacccccc accctcaaca ttgccccctt ttctggccccc tgagtgggac 120
 cttctctccc cccgagtagt cctgtctagg ggtgccccctg ctggggccccc tctgctcttc 180
 ctgctggagg ctggggccctt tcgggagtca gcagggtgccc cggccaaaccg cagccggcgt 240
 ggggtgagcg aaactgcacc agcgagtcgt cgggggtgagc tggctgtgtg cgatgcagtc 300
 agtggctggg tgacagaccc cgggaccgct gtggacttgc gtggcgcga ggtggaggtg 360
 ttgggcgagg tgcctgcagc tggcggcagt cccctccggcc agtacttctt taaaacccgc 420
 tgcaaggctg ataacgctga ggaagggtggc cggggggcag gtggaggggg ctgcccggga 480

T060X0 - 88T28X650

gtggacagga ggcaactgggt atctgagtgc aaggccaagc agtcctatgt gcgggcattg 540
 accgctgatg cccagggccg tgtggctgg cgatggattc gaattgacac tgcctgcgtc 600
 tgcacacactcc tcagccggac tggccgggccc tga 633

<210> 13
 <211> 465
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Recombinant
 coding sequence for BDNF precursor

<400> 13
 tttttatttt ttttaacttt ttatgtttc agttcttggc aacggcaaca aaccacaaca 60
 ttatcaagga atgaaatgca gacttttaa gttgtgcgc aatgactgtt tcccttctgg 120
 tcatggacat gtccaataaaa tagattgttag aaccactgtt ctgtataaac ttcatttata 180
 catgcaggcc ataaaattat tttttctta actgaataat ttaccctggt atgtatataat 240
 tacaataga taattttgtt ctcaatataa tctaatactat acaacataaa tccactatct 300
 tcccccttta atggtcaatg tacatacaca agaagtgtct atccttatga atcgccagcc 360
 aattctcttt ttgctatcca tggtaaggc cccgacgtac gactggtag ttcggcactg 420
 ggagttccaa tgcctttgtt ctatgcccct gcagccttct tttgt 465

<210> 14
 <211> 36
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 14
 tgtgttaacg ccaccatgtc catgttgttc tacact 36

<210> 15
 <211> 30
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 15
 tgtggatcct caggctttc tcacagcctt 30

<210> 16
 <211> 726
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Recombinant
 DNA

<400> 16

atgtccatgt ttttctacac tctgatcaca gctttctga tcggcataca ggcggaacca 60
caactcagaga gcaatgtccc tgcaggacac accatcccc aagtccactg gactaaactt 120
cagcattccc ttgacactgc ctttcgcaga gccccgacg ccccgccagc ggcgatagct 180
gcacgcgtgg cggggcagac cgcacacatt actgtggacc ccaggctgtt taaaaagcgg 240
cgactccgtt caccccggtgt gctgttagc acccagcctc cccgtgaagc tgcagacact 300
caggatctgg acttcgaggt cggtgggtgc gcccccttca gcaggactca caggagcaag 360
cggtcatcat cccatccat cttccacagg ggcgaattct cggtgtgtga cagtgtcagc 420
gtgtgggtg gggataagac caccgcaca gacatcaagg gcaaggaggt gatggtgttg 480
ggagaggtga acattaacaa cagtgtattc aaacagtact ttttgagac caagtgcgg 540
gacccaaatc ccgttgacag cgggtgccgg ggcattgact caaagcactg gaactcatat 600
tgttaccacga ctcacacctt tgtcaaggcg ctgaccatgg atggcaagca ggctgcctgg 660
cggttatcc ggatagatac ggcctgtgtg tgtgtgctca gcaggaaggc tgtgagaaga 720
gcctga 726